industry leading reliability

General Cable

University of Memphis

PanGen® Plus Delivers Data Center Consolidation and Future-Proofing

quality innovative technology service

Entrenched in history, the University of Memphis is home to over 21,000 students and 900 faculty members who enjoy enhanced learning and effective administrative functions made possible via advanced technology in the classroom and across campus. With a focus on delivering effective, efficient, and reliable network systems, the University's Information Technology Division maintains a robust campus-wide network consisting of over 12,000 network nodes, 6,500 phones, 2,400 cable TV connections, and 270 web cameras. To support this multitude of technology, the University operates a 7-day, 24-hour Tier 2 data center that was recently centralized from two separate buildings into one consolidated facility to provide greater capacity and improved scalability.

Finding the Right Solution

With the main data center facilities previously divided between two buildings, the University of Memphis ran out of space and adequate power in one location due to increasing demands for applications and more bandwidth.

"We ceased being able to bring any new systems into one of the computer rooms, which led us to gain new space next to our other location and consolidate the data center into one 3,000-square-foot space," says Michael Heppner, Communications Coordinator with the University. "This upgrade is really about consolidation and acquiring capacity, power, and space for future growth where we had none before."

Over the years, the University of Memphis has upgraded much of its network cabling infrastructure, with projects typically sent out for bid without specifying a specific vendor's product. As a result, several vendors' cable and connectivity components are installed around campus. Recently, the Information Technology Division saw the need to standardize on one solution and decided to take that approach with the data center upgrade.

"We're trying to simplify the process as much as possible by moving to one solution," says Heppner. "It makes much more sense to have one vendor to turn to if there's a problem and one vendor's products to maintain in inventory."

Having deployed several vendors' products in the past, the IT Division was well aware of what they liked and didn't like. One solution they had particular success with was the PanGen® Plus Structured Cabling Solution, a combination of enhanced Gen*SPEED*® 6500 Category 6 cable from General Cable and enhanced network connectivity and solutions from Panduit. Engineered to perform beyond 300 MHz, the PanGen Plus solution is protected by a comprehensive warranty program that provides compliance with all industry and global standards and 100% coverage on channel and component performance.

"After having done some smaller PanGen projects, we believed this solution would fit our needs perfectly for the upgrade of our data center," says Heppner. "We like the performance, the modularity, and the many configurations to choose from."

Another key component that helped solidify the PanGen solution was the Panduit® Net-Access™ switch cabinet, specifically designed through Panduit's partnership and advanced research with industry leader Cisco to optimize the thermal performance and cable routing of network switches. The Net-Access switch cabinet ensures the industry-recommended 6-inch clearance between equipment and cabinet walls and properly routes cables away from ventilation pathways. Also, the cabinet's dual-hinging front door provides unobstructed access to cables and active equipment, while its cable management features provide proper bend radius and make moves, adds and changes easier than ever for improved reliability and aesthetics in the data center.

PanGen® STRUCTURED CABLING SOLUTIONS

"The new main data center is really the lifeline of the campus, and now with the PanGen solution, it has everything we need to grow."

Michael Heppner, Communications Coordinator, University of Memphis

"Our entire network uses Cisco equipment, and the overall size and design of the Panduit Net-Access switch cabinets make them ideal for housing our new core Cisco Catalyst 6509 Switches," says Heppner. "From day one when we saw the Net-Access cabinets from Panduit, we knew that even if we were to choose another cabling and connectivity vendor, we would use those Panduit cabinets." According to Heppner, features like the Net-Access cabinets' optional exhaust units to dissipate heat will improve the overall reliability of the switches.

In addition to product quality, the information and support provided by local Panduit and General Cable representative Byron Carson Company also played a significant role. "Scott Ezell with Byron Carson brought in product samples and photos to help us design the new data center. Whenever we have a problem or question, Byron Carson Co. is always there to help or bounce ideas off of," says Heppner. "That customer service combined with great pricing really helped move us in this direction."

Deploying Innovative Solutions

Besides the new core Cisco switches, the University of Memphis data center also houses the university's centralized servers for high performance computing clusters (HPCC) and a variety of applications, including email. A large storage area network (SAN) also located in the new main data center stores well over 50 terabytes and growing, backed up via a robotic tape library.

"We're the biggest educational institution in Memphis, and we provide Internet bandwidth to other schools and organizations through our data center," adds Heppner. "Our new data center, therefore, needed to also include space for co-locating additional equipment."

The incoming service provider equipment, located in the entrance room next to the new data center, is connected to core switches via 50-micron multimode fiber using Panduit® OptiCam® pre-polished LC connectors, fiber patch cords, and Mini-Com® LC fiber adapter modules housed in Opticom® fiber adapter panels and enclosures. Within the new data center, three rows of cabinets contain servers and connections, and one row includes four Panduit Net-Access cabinets to house the core switches, also connected to each other via multimode fiber.

General Cable's Gen*SPEED*® 6500 Category 6 cable runs from the core switches to each of the 18 server cabinets, for a total of nearly 100,000 feet of cable. In each server cabinet, 72 copper connections are terminated at three 24-port Panduit Mini-Com angled modular patch panels, using Category 6 Mini-Com modules in a variety of colors. The angled design of the patch panels allows for easy port identification and for cable to flow to each side of the rack. With the modular design, Mini-Com modules can be installed from the front for easy moves, adds, and changes.

"As soon as we saw the angled patch panels, we knew right then we wanted them, because it allows us to have more rack space by eliminating the need for horizontal cable managers," says Heppner. "The modular design gave us the opportunity to purchase four different colored jacks for color-coding primary Ethernet, secondary Ethernet, server connections and miscellaneous." According to Heppner, the color-coding scheme makes for easy management and reduces errors within the data center.

While the University of Memphis often hires outside contractors to install network cabling, the new data center was deployed by the University's own infrastructure team. "Since this was our first big data center installation, we felt as though we really wanted to do it ourselves. It also helped to reduce the total cost of the project," explains Heppner. "It really was a joint effort. My staff and I did all the copper and fiber terminations and testing, but many people helped out."

Designing for the Future

Once the new data center is completely up and running, the University will dismantle the old computer room and enjoy plenty of space, capacity, and power for future growth. "We factored in expansion from the get-go, and the new generator and power supplies will provide us with more reliability, while the new core switches will enable us to add more servers as we grow," says Heppner.

As the University moves forward with other cabling projects across campus, like the new University Center that recently broke ground, the IT Division hopes to also deploy the PanGen structured cabling system and eventually standardize on PanGen for all University network cabling projects.

Heppner concludes, "We see many other state institutions and colleges specifying a single vendor, and while it may take some time, that's what we're trying to achieve here. The new main data center is really the lifeline of the campus, and now with the PanGen solution, it has everything we need to grow."

About General Cable

General Cable (NYSE:BGC), headquartered in Highland Heights, Kentucky, is a global leader in the development, design, manufacture, marketing and distribution of copper, aluminum and fiber optic wire and cable products for the energy, industrial, specialty and communications markets. The Company's operations are divided into eight reportable segments: North American Electric Utility, International Electric Utility, North American Portable Power and Control, North American Electrical Infrastructure, International Electrical Infrastructure, Transportation and Industrial Harnesses, Telecommunications and Networking. General Cable is influencing the world, with more than 40% of our sales generated outside North America and more than 13,000 associates in 46 manufacturing facilities throughout 23 countries. Visit our Web site at www.generalcable.com.

About PANDUIT

PANDUIT is a world-class developer and provider of leading-edge solutions that help customers optimize the physical infrastructure through simplification, agility and operational efficiency. *PANDUIT's Unified Physical Infrastructure*SM (UPI) based solutions give enterprises the capabilities to connect, manage and automate communications, computing, power, control and security systems for a smarter, unified business foundation. Strong relationships with technology leaders, complemented with its global staff and unmatched service and support, make *PANDUIT* a valuable and trusted partner. Visit www.panduit.com for additional information.

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